

WE CLAIM:

1. A device for treatment of exhaust gases comprising:

a housing;

a fragile structure resiliently mounted within said housing; and

a non-intumescent mounting mat disposed in a gap between said housing and said fragile structure, wherein said mounting mat includes melt-formed, leached glass fibers containing at least 67 percent by weight silica and exerts a minimum holding pressure for holding said fragile structure within said housing of one of (i) at least about 10 kPa after 1000 cycles of testing at a hot face temperature of about 900°C, a gap bulk density of from about 0.3 to about 0.5 g/cm³, and a percent gap expansion of about 5 percent, or (ii) at least about 50 kPa after 1000 cycles of testing at a hot face temperature of about 300°C, a gap bulk density of from about 0.3 to about 0.5 g/cm³, and a percent gap expansion of about 2 percent.

2. The device of claim 1, wherein said housing has an inlet at one end and an outlet at an opposite end through which exhaust gases flow; and wherein said fragile structure has an outer surface, an inlet end surface at one end in communication with said inlet of said housing and an outlet end surface at an opposite end in communication with said outlet end of said housing.

3. The device of claim 1, wherein said mounting mat comprises at least one integral, substantially non-expanding ply comprising melt-drawn, leached glass fibers containing silica.

4. The device of claim 1, wherein said leached glass fibers contain at least 90 percent by weight silica.

5. The device of claim 1, wherein said leached glass fibers contain from about 90 to less than 99 percent by weight silica.

6. The device of claim 1, wherein said leached glass fibers contain from about 93 to about 95 percent by weight silica and from about 4 to about 6 percent by weight alumina.

7. The device of claim 1, wherein said leached glass fibers contain less than about 1 percent by weight alkali or alkaline earth metals.

8. The device of claim 1, wherein said mounting mat comprises from about 50 to 100 percent by weight of said leached glass fibers.

9. The device of claim 1, wherein said mounting mat comprises at least 80 percent by weight of said leached glass fibers.

10. The device of claim 1, wherein the mounting mat is substantially free of binder.

11. The device of claim 1, wherein the leached glass fibers have a diameter greater than 3.5 microns.

12. The device of claim 1, wherein the leached glass fibers have a diameter greater than 5 microns.

13. The device of claim 1, wherein the leached glass fibers are melt drawn.

14. The device of claim 1, wherein the leached glass fibers are substantially shot free.

15. The device of claim 1, wherein the mounting mat contains greater than 0 to about 50 weight percent, based upon 100 percent by weight of the total mat, of S2-glass fibers or refractory ceramic fibers.

16. The device of claim 1, wherein the mounting mat is heat treated at a temperature of at least about 300°C or at least about 900°C for an effective period of time to meet the effective minimum holding pressure for holding the fragile structure within the housing.

17. The device of claim 1, wherein the leached glass fibers are heat treated at a temperature of at least about 300°C or at least about 900°C for an effective period of time such that the leached glass fibers, when formed into the mounting mat, meet the minimum holding pressure for holding the fragile structure within the housing.

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18. The device of claim 1, wherein the device is a catalytic converter or diesel particulate trap.

19. A method of making a device for treating exhaust gases, comprising:

10 providing a mounting mat comprising melt-formed glass fibers containing silica, wherein the melt-formed glass fibers are formed by

treating the melt-formed glass fibers whereby the treated glass fibers have a silica content greater than the silica content of the glass fibers prior to being treated and whereby the treated glass fibers contain at least
15 67 percent by weight silica;

wrapping the mounting mat around a fragile structure adapted for treating exhaust gases; and

disposing the fragile structure and the mounting mat within a housing, whereby the mounting mat holds the fragile structure resiliently within the housing, and wherein the mounting mat exerts a minimum holding pressure for
20 holding said fragile structure within said housing of one of (i) at least about 10 kPa after 1000 cycles of testing at a hot face temperature of about 900°C, a gap bulk density of from about 0.3 to about 0.5 g/cm³, and a percent gap expansion of about 5 percent, or (ii) at least about 50 kPa after 1000 cycles of testing at a hot face
25 temperature of about 300°C, a gap bulk density of from about 0.3 to about 0.5 g/cm³, and a percent gap expansion of about 2 percent.

20. The method of claim 19, wherein the step of treating the melt drawn glass fibers includes leaching the glass fibers in an acid solution.

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21. The method of claim 19, further including the step of heat treating the mounting mat prior to wrapping the fragile structure.

22. The method of claim 20, wherein the step of heat treating comprises heating the fibers or mounting mat at a temperature between about 900°C and about 1100°C, for greater than 1 hour.

- 5 23. The method of claim 18, wherein the step of heat treating comprises heating the fibers or mounting mat at a temperature of at least about 300°C for an effective period of time to meet the effective minimum holding pressure for holding the fragile structure within the housing.